

NOTES ON A NEW CLADOHEPATIC NUDIBRANCH FROM FRIDAY
HARBOR, WASHINGTON.

H. P. KJERSCHOW AGERSBORG, PH.D.,
Department of Zoology, University of Nebraska.

OLEA (*genus nov.*).

The body is truncate anteriorly, elongate, limaeiform, tapering to a point posteriorly. The back is gently arched and smooth, and passes imperceptibly into the sides which are also gently arched, so that the body with the back and sides may be said to arch until they touch the foot from which they are set off. The back bears two rows of papillæ on each side located posteriorly to the middle of the body; those in the dorsal row are larger than those in the ventral; the papillæ of the latter alternate in position with those of the former. The position of the papillæ (Fig. 1) is remarkable from the fact that these organs are clustered into two rows, dorso-laterally, on the middle aspect of the body in the position similar to that of the cerata of *Doris*. The tapering posterior part of the body extends posterior to the base of the last pair of papillæ a distance equal to one-half the length of that part of the body which is anterior of the first pair of papillæ. The heart was seen pulsating just below and between the first anterior papillæ. The anal pore is on the right side, in front of the heart, near the mid-dorsal line. The genital openings are placed antero-laterally near the end of the body. There are two small pigment spots on the dorso-lateral part of the neck where the dorsal margin of the less pigmented border of the neck merges with the darker area of the back. The body is everywhere uniformly ciliated.

A radula is totally absent. There are neither tongue nor jaws.

OLEA HANSINEËNSIS (*sp. nov.*). Plate VI.

Distribution: Puget Sound (Friday Harbor), Washington.

Dimensions: The length of the largest specimen was 13 mm.; the smallest, 7 mm., and the height 2 mm. and 1 mm., respectively.

Color: *Olea hansineënsis* is dark brown in color, very much like *Haminea* Leach, of the *Tectibranchiata*; but the former is studded everywhere with lighter spots of various sizes. In the lamp-light, however, the color changed to a light yellowish brown hue. The tips of the papillæ, the back between the papillæ, the sole of the foot and its dorsal posterior part, and the sides of the head and neck, are lighter than the rest of the body.

Foot: The foot (Fig. 2) is nearly as wide as the body is high. It is convex anteriorly, with papillary prolongations of the antero-lateral angles. Posteriorly it tapers lanceolately to a point. Its surface is uniformly ciliated.

Head: The head is set off from the body by a short but distinct neck. Dorsal tentacles are absent. The oral tentacles are lateral prolongations of the hood, one on each side. Labial parts consist of a rounded lobe on each side, and one median dorsal lobe. The mouth is sub-terminal, vertical; the ventral lip bilobed.

Habitat: These very interesting animals live on the eel-grass (*Zostera marina*). I never have been able to distinguish them from their environments while in their native habitat because of their resemblance in color to the vegetative (filamentous diatomaceous) growth which together with hydroids fairly cover the fronds of the *Zostera*; but they were detected when brought accidentally into the laboratory along with *Hermisenda opalescens* Cooper, and *Haminea* Leach, commonly found among the eel-grass at Brown Island, Friday Harbor, Washington, in very large numbers, especially the latter. They were dipped up from the eel-grass by means of a gravy-strainer with *Hermisenda* and *Haminea*.

Nidosome: A number of nidosomes were laid in the dish in the laboratory on the second morning after capture, the animals being segregated from other nudibranchs. The nidosome is a simple coiled string (Fig. 4) from 20 to 70 mm. long and 1 mm. in diameter. Oviposition continued for three weeks. The eggs are capsulated, and there is only one egg in each capsule. Cleavage total and spiral. During oviposition the animal crawls in the direction of the arrow (Fig. 4).

Death-feigning was commonly practiced when the animals were disturbed. But they soon resumed active movements on the bottom and along the side of the dish and toward the top of the water. When the water became stale they invariably dropped to the bottom of the dish and lay motionless. This habit is contrary to that of the *Aeolidia* which seek the surface at such times and remain mostly adhering to the surface film. *Olea hansineënsis* comes to the surface when it is feeding (it is constantly nipping at nearly microscopic organisms when at the surface, crawling as it does on the surface film with the back downward) or actively crawling; it never rests on the surface film as the *Aeolidia* do: when it rests it is on the bottom, and often appears to be dead. Shaking the finger-bowl, however, awakens it from its slumber, when it again becomes active.

I am not sure of its exact systematic position until I find opportunity to examine its anatomy more carefully. The liver extends into the papillæ (Fig. 3), and on that account it is, of course, a Cladohepatic form. But the hepatic arborization is not so extensive as *e. g.*, in *Melibe leonina* (Gould), Agersborg (1916, 1919, 1921, 1922, 1923, 1923a). The head of *Olea hansineënsis* resembles that of *Limapontia nigra* Johnston, but unlike this species which has no papillæ, *O. hansineënsis* has two rows of papillæ clustered closely together posterior to the middle of the back, anterior and posterior to which it is perfectly smooth. The position of the anus and other anatomical differences, as *e. g.*, the radula, remove it from this type. The gonads are divided into a number of acini connected by a branching duct-system as in *Doto coronata* Gemlin. Another form to which its head bears resemblance in shape is *Acteonia corrugata* Ald. & Hanc. I cannot find any resemblance in *O. hansineënsis* to any of the numerous types described by Bergh (1879, 1880, 1894, 1904), Cockerell (1901, 1901a, 1902, 1908, 1915), Cockerell and Eliot (1905), Cooper (1862), Eliot (1910), Fewkes (1889), MacFarland (1905), O'Donoghue (1921), Pease (1872), and Stearns (1873). O'Donoghue, to whom I presented a specimen, writes me: "The other one (*O. hansineënsis*) is not

known to me and as far as I can find has not been recorded previously from the Pacific Coast of North America." It is quite safe to erect for this type a new genus; it may even be found to deserve family rank. The generic name, which I have proposed, is *Olea* in honor of my sister who for a number of years was a constant source of inspiration to me in my scientific studies in this country; the specific name is *hansinensis*, in honor of my first, the noblest, and the greatest of all my teachers, my mother.

Only seven specimens in all were collected. The place of collection was from *Zostera marina* in the inner bay of Brown Island, opposite the Laboratory of the Puget Sound Biological Station at Friday Harbor, Washington. In fixing the animals, nearly all the papillæ dropped off. Two specimens, preserved in 5% formaldehyde, were dissected for the purpose of studying the radula, but no trace of such an organ was detected. Four specimens were fixed in Flemming's chromo-osmic-acetic mixture for cytological study. Of these, one is designated as the type, and remains in the collection of the writer. Dr. Chas. H. O'Donoghue, of the University of Manitoba, has one specimen which was preserved in formaldehyde.

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EXPLANATION OF FIGURES, PLATE VI.

1. Drawing from life of *Olea hansineënsis* (*gen. et sp. nov.*), dorsal view. L, lateral labial lobe; op, oral tentacles. The eye spots are seen just caudad to the oral tentacles; the dorsal labial lobe is seen between the lateral labial lobes.

2. Drawing from life of *O. hansineënsis*, ventral view. L, lateral labial lobes; op, oral tentacles. Note the ventral labial lobe between the lateral labial lobes just cephalic to the anterior convex border of the foot.

3. Drawing of a large papilla from a preserved specimen to show the hepatic extension into the organ. The outline of the papilla is shown in the line surrounding the stippled area, the hepatic branch. Greatly enlarged.

4. Nidosome. A, beginning; b, end. The arrows indicate the track followed by the animal during oviposition. Enlarged.

EFFORTS TO ACCLIMATIZE ATLANTIC OYSTER AND SOFT CLAM IN THE HAWAIIAN ISLANDS.

BY R. A. COLEMAN,

Agent, U. S. Bureau of Fisheries, San Francisco, California.

An attempt is being made by the Hawaiian Fish and Game Commission with the cooperation of the U. S. Bureau of Fisheries to introduce two highly-prized shellfish, the Atlantic coast oyster, *Ostrea elongata*, and the soft clam, *Mya arenaria*, into Hawaiian waters. Although serious difficulties have been encountered, it is felt that there is ground for hopes of the success of this enterprise.

The first efforts were with the oyster. In May, 1921, five

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